



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,885	03/04/2004	Hideki Kuwajima	2004_0280A	5187

513 7590 03/09/2006

WENDEROTH, LIND & PONACK, L.L.P.  
2033 K STREET N. W.  
SUITE 800  
WASHINGTON, DC 20006-1021

EXAMINER

HANNON, THOMAS R

ART UNIT PAPER NUMBER

3682

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/791,885

**Applicant(s)**

KUWAJIMA, HIDEKI

**Examiner**

Thomas R. Hannon

**Art Unit**

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received:
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 3682

The substitute specification filed February 15, 2006 has been entered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 12, and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hofmann et al. (U.S. Pat. No. 4,398,775).

Hofmann discloses a bearing device comprising a first bearing (including inner race 2) having a first retainer (left half of retainer 6 in Figure 1) with a center axis (A) along a bearing center axis; and a second bearing (including inner race 3) having a second retainer (right half of retainer 6 in Figure 1) with a center axis along the bearing center axis; the first and second bearings are arranged one upon another in an axial direction along the bearing center axis; a plurality of first grooves are provided at an outer periphery of the first retainer and are arranged to have balls (4) disposed therein, a plurality of second grooves are provided at an outer periphery of the second retainer and are arranged to have balls (5) disposed therein. The plurality of first grooves is constituted by N first grooves, and the plurality of second grooves is constituted by N second grooves (inherent in the alternating arrangement). Hofmann does not specify the precise spacing of the balls, however it is claimed by Hofmann that “one set of balls

Art Unit: 3682

and group of teeth is angularly offset from the other set of balls and group of teeth” (claim 3).

As Hofmann does not disclose that the angular offset is unequal, this would anticipate an equal spacing of the teeth (i.e., groove) and balls. Similarly as there is no disclosure in Hofmann that the spacing of the balls have unequal angular spacing, this would inherently include an equal spacing of the balls at  $360/\text{Number of balls}$ . Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have equal spacing of the balls of each row of balls, because this is notoriously old and well known in the art. Moreover, the staggering or angular offset of the adjacent row of balls to be between the adjacent row at the angle of  $360/2N$ , is further obvious to one of ordinary skill in the art because this would have permitted maximum saving of space.

With respect to claim 14, the outer housing 36 of Hofmann corresponds to the claimed outer sleeve, and the shaft 1 corresponds to the claimed inner sleeve.

Claims 13, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann ‘775 as applied to claims 11, and 12 above, and further in view of Lindrose et al. (U.S. Patent No. 6,113,277). Lindrose discloses a recording reproducing device with a head support device comprising a support arm having a slider and a voice coil coupled thereto, and a bearing device to rotatably support the support arm (Figure 1). The bearing device of Lindrose includes first and second bearings arranged one upon another in an axial direction, where the number of balls in each row of the retainer is three. With respect to claim 13, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bearing arrangement of Hofmann such that the number of balls, and corresponding grooves in the retainer, are three, because this is taught and suggested by Lindrose as being the minimal number

Art Unit: 3682

o required balls, thus minimizing the necessary preload force. With respect to claims 17-19, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teaching of Hofmann in known devices requiring duplex bearing, including that taught and suggested by Lindrose et al.

Claims 13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. '775 as applied to claims 11, 12, and 14 above, and further in view of Albrecht et al. (U.S. Pat. No. 5,768,060). Albrecht discloses a bearing assembly in which the number of balls is three. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bearing arrangement of Hofmann such that the number of balls, and corresponding grooves in the retainer, are three, because this is taught and suggested by Albrecht as being the minimal number of required balls, thus minimizing the necessary preload force. With respect to claims 15 and 16, Albrecht discloses having the contact surfaces of the grooves on the inner and outer races with a radius of curvature that is greater than the radius of the balls. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the races of Hofmann such that the raceway grooves have a greater radius of curvature than the balls because this is taught and suggested by Albrecht as ensuring the balls make contact at a single contact point thus minimizing preload.

Applicant's arguments filed February 15, 2006 have been fully considered but they are not persuasive. Applicant states "there is no disclosure or suggestion that for example, the upper grooves are circumferentially angularly spaced apart by angular intervals of  $360/N$  degrees and that, for example, the lower grooves are circumferentially angularly spaced apart by angular intervals of  $360/N$  degrees, and further the first and second grooves, when viewed together along

Art Unit: 3682

the direction of the bearing center axis, are circumferentially angularly spaced apart by angular intervals of  $360(2n)$  degrees, and such that the first radial line segments respectively connecting the center axis of the first retainer with centers of the upper grooves do not overlap with the second radial line segments respectively connecting the center axis of the second retainer with centers of the lower grooves". However, as specified in the rejection, above, these limitations are either inherent in the disclosure of Hofmann, or suggested therein.

With respect to the combination rejection further in view of Lindrose et al., Applicant has not argued the propriety of the combination rejection as applied to the claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

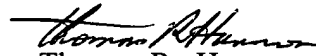
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R. Hannon whose telephone number is (571) 272-7104. The examiner can normally be reached on Monday-Thursday (8:30-7:00).

Art Unit: 3682

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Thomas R. Hannon  
Primary Examiner  
Art Unit 3682

trh